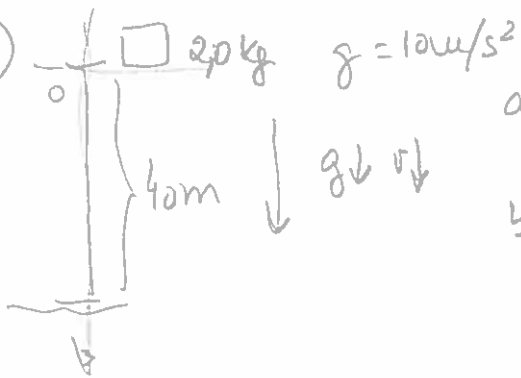


Queda e lançamento com
efeito do resist. do ar
desprezível

limbo neutro

101



$$F_R = F_g = m \times g$$
$$F_R = F_g = 2 \times 10 = 20 \text{ N}$$

a)

b)

$$v = g t$$

$$v = 10 \times t$$

$$y = \frac{1}{2} g t^2$$

$$40 = 5 \times t^2$$

$$t^2 = \frac{40}{5} = 8$$

$$t = \sqrt{8} = 2,82 \text{ s}$$

c) $y = 20 \text{ m}$

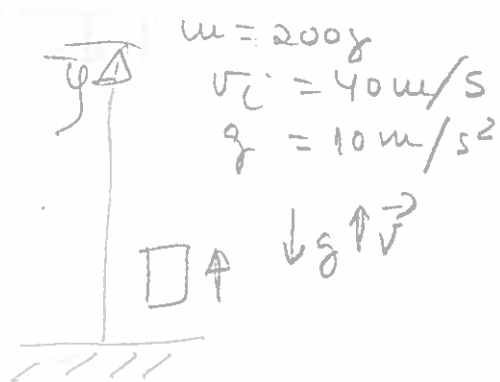
$$y = y_0 + v_0 t + \frac{1}{2} g t^2$$

$$y = \frac{1}{2} g t^2$$

$$20 = \frac{1}{2} 10 \times t^2$$

$$20 = 5 t^2$$

$$t^2 = \frac{20}{5} = 4 \Rightarrow t = \sqrt{4} = \underline{\underline{2 \text{ s}}}$$



a) $F_R = ?$

$$F_g = \bar{F}_R = m(g)$$

$$F_g = \bar{F}_R = 92 \times 10$$

$$\bar{F}_R = -2 \text{ N}$$

b) Cálculo de altura

$$y = y_0 + v_0 t + \frac{1}{2} g t^2$$

$$y = v_0 t - \frac{1}{2} g t^2$$

$$y = 40 \times t - \frac{1}{2} \times 10 t^2$$

$$y = 40 \times 4 - \frac{1}{2} \times 10 \times (4)^2$$

$$y = 80 \text{ m}$$

① Cálculo do tempo pela velocidade

$$v = v_0 - g t$$

$$0 = 40 - 10 \times t$$

$$10t = 40$$

$$t = \frac{40}{10} = 4 \text{ s}$$

$$(v=0)$$

c) $y = 60 \text{ m}$

$$60 = 40 \times t - \frac{1}{2} \times 10 t^2$$

$$60 = 40t - 5t^2$$

$$t <$$

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$$m = 100 \text{ kg}$$

$$y = 80t - 10t^2$$

$$g = ?$$

$$a) \quad y = 80t - 10t^2 \Leftrightarrow y = y_0 + v_0 t - \frac{1}{2} g t^2$$

$$\quad \quad \quad \parallel \quad \quad \parallel$$

$$\quad \quad \quad v_0 \quad \quad 10 = \frac{1}{2} a$$

$$|a| = 20 \text{ m/s}^2 = g \text{ do planeta} = -20 \text{ m/s}^2$$

altura do planeta

$$b) \quad F_R = m \vec{a} \quad \Leftrightarrow \quad F_R = 0,1 \times (-20) \text{ m/s}^2$$

$$F_R = -2 \text{ N}$$

c) altura do ponto + alto

$$v = 0$$

$$v_0 = 80$$

$$a = 20$$

① cálculo do t correspondente a $v = 0$

$$v = v_0 - at$$

$$0 = 80 - 20t$$

$$-20t = -80$$

$$t = 4 \text{ s}$$

subida

② cálculo da pos correspondente a $t = 4 \text{ s}$

$$y = 80 \times 4 - 10 \times (4)^2$$

$$y = 160 \text{ m}$$

Nenhuma
descida
716

716

(d) instante em que o objeto passa a altura 60 m

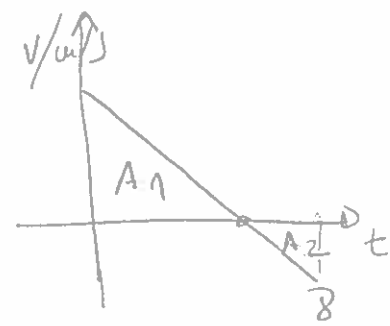
$$60 = 80 \times t - 10 \times t^2$$

$$80t - 10t^2 - 60 = 0$$

$$10t^2 - 80t + 60 = 0$$

$$x = \frac{-80 \pm \sqrt{(80)^2 - 4 \cdot 10 \cdot 60}}{2 \cdot 10}$$

$$x = \frac{-80 \pm 63,2}{20}$$



$m = 1 \text{ kg}$

a) $|\vec{g}|$ M R U R

$$\vec{g} = \frac{\Delta v}{\Delta t} = \frac{0-40}{4} = -10 \text{ m/s}^2$$

$$|\vec{g}| = 10 \text{ m/s}^2$$

b) $\vec{F}_R = m \vec{g}$

$$F_R = 1 \times (-10) = -10 \text{ N}$$

c) A_1 ~~está~~ área acima

$$\frac{40 \times 4}{2} = \frac{160}{2} = 80 \text{ m}$$

ou $v = 0 \text{ m/s}$ corresponde à altura máxima

$$0 = v_0 - g t_{\text{subida}}$$

$$\Rightarrow g t_{\text{subida}} = v_0 \Leftrightarrow t_{\text{sub}} = \frac{v_0}{g} = \frac{40}{10} = 4 \text{ s}$$

d) $h = 60 \text{ m}$

$$y = 60 \text{ m}$$

$$y = v_0 t - \frac{1}{2} g t^2$$

$$y = 40 t - 5 t^2$$

$$60 = 40 t - 5 t^2$$

$$t < \begin{matrix} 2 \text{ s} \\ 6 \text{ s} \end{matrix} \rightarrow \begin{matrix} \text{tempo} \\ \text{de subida} \end{matrix} \quad \begin{matrix} \text{na} \\ \text{descida} \end{matrix}$$

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$E_{m A}$ $h = 10 \text{ m}$ $g = 10 \text{ m/s}^2$
 $v_i = ?$

$E_{m B}$

$$E_{m A} = E_{m B}$$

$$\frac{1}{2} m v_f^2 + \underbrace{mg h_f}_0 = \frac{1}{2} m v_i^2 + \underbrace{mgh}_0$$

$$mgh = \frac{1}{2} m v_i^2$$

$$v_i = \sqrt{\frac{gh}{\frac{1}{2}}}$$

$$v_i = \sqrt{2gh}$$

$$v_i = \sqrt{2 \times 9,8 \times 10,0} =$$

$$v_i = \sqrt{196 \text{ m/s}} = \boxed{14 \text{ m/s}}$$

- class in order as
tolls
- exercícios preparados exame quest
- exercício corrigido quest projetos (solved)
- exercício filas para els new Refuel + zone
- livro 11: Home new solved
- Gave exame exercício
- Hor. circular
- Hor. plano inclined

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$$t = 3 \text{ s}$$

$$g = 10 \text{ m/s}^2$$

altura de torre

$$y = y_0 + v_0 t + \frac{1}{2} g t^2$$

$$y = g t^2$$

$$y = 10 \times (3)^2$$

$$y = 45 \text{ m}$$

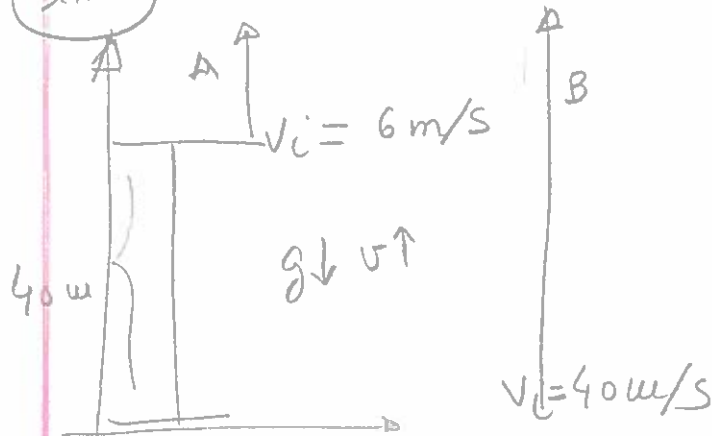
$$v = v_0 + g t$$

$$v = g t$$

$$v = 10 \times 3$$

$$v = 30 \text{ m/s}$$

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$$g = 10 \text{ m/s}^2$$

$$y = 40 + 6t - 5t^2$$

a)

$$y = y_0 + v_0 t - \frac{1}{2} g t^2$$

$$y = 40 + 6 \times t - \frac{1}{2} \times 10 t^2$$

2

$$y = 40 + 6 \times 0,6 - \frac{1}{2} \times 10 (0,6)^2$$

$$y = 38,46 \text{ m} \approx 41,8 \text{ m}$$

$$v = v_0 - g t$$

$$0 = 6 - 10 \times t$$

$$10 t = 6$$

$$t = \frac{6}{10} = 0,6 \text{ s}$$

b) para de B pseudo = pedra A chute = li mex

$$t = 0,6 \text{ s}$$

eq. de B

$$y = +40t - 5t^2$$

$$y = 40 \times 0,6 - 5 \times (0,6)^2 = 22,2 \text{ m}$$

$$c) 40t - 5t^2 = 40 + 6t - 5t^2$$

$$40t = 40 + 6t$$

$$40t - 6t = 40$$

$$34t = 40$$

$$t = \frac{40}{34} = 1,185$$

imite

d) Valor de posy em T os corpos chocam

$$y_A = y_B$$

$$= 40 \times 1,18 - 5 \times (1,18)^2 = 40,14 \text{ m}$$

110)

Linha
vel +

Pedra A

$$y_A = y_{0A} + v_{0A}t - \frac{1}{2}gt^2$$

$$y_A = 40 + 6t - 5t^2$$

Pedra B

$$y_B = y_{0B} + v_{0B}t - \frac{1}{2}gt^2$$

$$y_B = 40t - 5t^2$$

a) Ponto + alto $v_A = 0 \text{ m/s}^{-1}$

$$v_A = v_{0A} - gt = 0$$

$$6 - 10t = 0 \Rightarrow t = 0,6$$

b) Quando chuge - pra + alto
 $t = 0,6 \text{ s}$

$$y_B = 40t + 5t = 40 \times 0,6 + 5 \times 0,6 = 27,2 \text{ m}$$

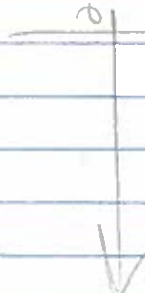
c) Pedra B chuge e Pedra A puaa

$$y_B = y_A$$

$$40t - 5t^2 = 40 + 6t - 5t^2$$

$$t = 1,18$$

$$d) y_A = y_B = 40 \times 1,18 - 5 \times 1,18^2 = 40,14$$



A diagram showing a vertical line with a horizontal line at the top, representing a starting point. A downward-pointing arrow is drawn from the horizontal line, indicating the direction of motion.

$$v = v_0 + \frac{1}{2} g t^2$$
$$= \frac{1}{2} g t^2$$